M.Sc. (IT) 4th Semester Examination (CBCS), May 2024
Internet of Things
MSIT0014E

Full Marks: 70 **Time: 3 hours**

The figure in the margin indicate full marks for the question

Answer Question **No 1(compulsory)** and **Any Five** from the rest

			Marks
1.			
	a.	Define the Internet of Things.	[2]
	b.	What is the significance IoT in modern technology?	[2]
	c.	Discuss the key components of an IoT system.	[2]
	d.	What are the roles of the key components in enabling IoT functionality?	[2]
	e.	Provide two real-world examples of IoT applications	[2]
2.	a.	Compare and contrast the MQTT and CoAP protocols in terms of their suitability for IoT applications.	[3]
	b.	Explain the role of HTTP and WebSocket protocols in IoT communication, highlighting their advantages and limitations.	[4]
	c.	Describe the significance of the LoRaWAN protocol in IoT networks, citing its advantages and possible use cases.	[5]
3.	a.	Identify and explain three major security challenges associated with IoT devices and networks.	[3]
	b.	Discuss the concept of end-to-end encryption in IoT systems and its role in ensuring data confidentiality.	[4]
	c.	Propose three strategies to mitigate security risks in IoT deployments, providing examples for each.	[5]
4.	a.	Define IoT data analytics and outline its importance in extracting valuable insights from IoT-generated data.	[3]
	b.	Compare batch processing and stream processing techniques in IoT data analytics, highlighting their respective advantages and use cases.	[4]
	c.	Discuss the role of machine learning algorithms in IoT data analytics, providing two examples of applications where machine learning enhances IoT systems.	[5]
5.	a.	Explain how IoT technology is revolutionizing the healthcare industry, citing specific examples of IoT-enabled healthcare devices or systems.	[3]
	b.	Discuss the challenges and ethical considerations associated with the use of IoT in healthcare settings.	[4]
	c.	Propose two innovative IoT-based solutions to improve patient monitoring or healthcare delivery, explaining their potential benefits.	[5]
6.	a.	Define the concept of smart cities and elucidate the role of IoT technology in enabling smart city initiatives.	[3]
	b.	Discuss three key areas where IoT applications can contribute to making cities smarter, safer, and more sustainable.	[4]
	c.	Provide examples of IoT-based solutions implemented in real-world smart city projects, highlighting their impact on urban living.	[5]
7.	a.	Explain how IoT is transforming industrial automation processes, emphasizing the concept of Industry 4.0.	[3]
	b.	Discuss the benefits and challenges of implementing IoT-driven automation in manufacturing industries.	[4]

c. Provide two examples of IoT-enabled industrial automation systems, detailing their functionalities and advantages. [5]

8. a. Describe the role of IoT technology in environmental monitoring and conservation efforts. [3]
   b. Discuss the sensors commonly used in IoT environmental monitoring systems and their specific applications. [3]
   c. Provide two case studies where IoT-based environmental monitoring solutions have been deployed to address specific environmental challenges. [3]

[3]

9. a. Identify and explain three emerging trends or advancements in IoT technology that are likely to shape its future trajectory. [3]
   b. Discuss the potential societal impacts of widespread adoption of IoT technologies in various sectors. [4]
   c. Predict the challenges that may arise with the proliferation of IoT devices and propose strategies to address them proactively. [5]